

REMARKS

Claims 6-10 and 12-13 are pending in the patent application. Claims 1-3 and 5 are currently canceled without prejudice or disclaimer. Claim 4 was previously canceled without prejudice or disclaimer. Claims 6 and 8-10 are currently amended. Claim 11 was presented in an Office Action response after final rejection, but was never entered and is now cancelled. New independent claim 12 and new dependent claim 13 have been added. No new matter has been added.

The scope of claim 12 is identical to that of claim 1 prior to the final rejection, additionally removing the limitation of claim 4 and inserting the limitations of claims 2 and 3 prior to the final rejection. Instead of merely amending claim 1, the Applicants submit new claim 12, which is written in a style that adheres more closely to typical U.S. claim construction. No new matter is added.

Claim 12 is neither anticipated by nor obvious over Gustafson

In anticipation of a 35 U.S.C. 102 or 103 rejection by the Examiner, the Applicant asserts that new, independent claim 12 is neither anticipated by nor obvious over U.S. Patent No. 2,226,491 ("Gustafson").

It is instructive to clarify several of the elements recited by claim 12, shown most clearly in FIG. 18. The "spring element" is shown in one embodiment as element 8 in Fig. 18. The "workpiece contact" is shown in one embodiment as element 9. Note that the workpiece contact is not the same as the spring element, as recited by claim 12. (The following reference numbers are for illustration only and not intended as limitations. It is important to note how the spring element (8) may have openings (20), while the workpiece contact (9), shown in FIG. 18 as an annular surface around the edge of the underside of the spring element, may have no such openings. The spring element (8) is a ring that "has a plurality of openings (20) distributed uniformly over its periphery", as shown in FIG. 18, as well as FIGs. 19-22. In contrast, the workpiece

contact (9) is "annular throughout", as shown in the example of FIG. 18. This distinction is important for analyzing the teachings of Gustafson.

Gustafson discloses a self-locking screw in which the head has an integral rim or flange (3) that is broken into a plurality of independent locking portions, with each portion disaligned from the bottom of the head. The locking portions may have a variety of different shapes (see, for instance, FIGs. 2, 5 and 8), but in all cases they make contact with the surface before the screw is "driven home", and "dig in" to the surface to form a locking mechanism.

One shortcoming of Gustafson is that it may damage the surface to which the screw is applied. The "digging in" of the screw may produce chips, which is undesirable. In contrast, the screw element of claim 12 is annular, and does not dig into the surface to lock the screw. This is a highly desirable improvement over Gustafson.

Gustafson fails to disclose a "workpiece contact which is annular throughout", as recited by claim 12. The "workpiece contact" of Gustafson is explicitly discontinuous, and is described as a "wedge-shaped locking edge 15" or a "series of locking corners 24", for example. Because an element of claim 12 is absent from Gustafson, claim 12 is not anticipated by Gustafson.

Furthermore, having a "workpiece contact which is annular throughout" is not taught or suggested by Gustafson. Indeed, the invention of Gustafson would not work if the workpiece contact were annular throughout, since there would be no structure to dig into the surface and form the lock. Because an element of claim 12 is not taught or suggested by Gustafson, claim 12 is not obvious in view of Gustafson.

Claim 12 is not anticipated by EP-A-0 989 311

EP-A-0 989 311 ("D1") is one of three references cited in the parallel European patent application. D1 discloses a screw element with a tool engagement element and

a spring element which is formed on the screw element in one piece in coaxial relationship with the screw axis. This is most clearly seen in FIG. 4 of D1. However, the spring element of D1 does not disclose the ring forming the spring element having a plurality of openings distributed uniformly over its periphery, as recited by claim 12. Because an element of claim 12 is absent from D1, D1 does not anticipate claim 12.

Claim 12 is not anticipated by Lovisek

U.S. Patent No. 4,350,465 ("Lovisek") is one of three references cited in the parallel European patent application. Lovisek discloses a spider washer head screw, in which the head has a slotted flange. Lovisek does not disclose the ring forming the spring element having a plurality of openings distributed uniformly over its periphery, as recited by claim 12. Because an element of claim 12 is absent from Lovisek, Lovisek does not anticipate claim 12.

Claim 12 is not anticipated by DE 1 090 468 B

DE 1 090 468 B ("D3") discloses a self-tapping screw (see FIG. 1) having a non-elastic ring element 30 with a plurality of sharp-edged projections (38). D3 completely fails to disclose the ring 30 providing any spring characteristics. Further, D3 completely fails to disclose any openings in the ring element 30, as recited by claim 12. Because an element of claim 12 is absent from D3, D3 does not anticipate claim 12.

Claim 12 is not obvious in view over EP-A-0 989 311 ("D1"), Lovisek, and DE 1 090 468 B ("D3"), taken alone or in combination

An object of claim 12 is a screw element in which a spring-loaded ring is pressed into contact with a surface, forming a friction lock that does not substantially dig into the surface. In order to ensure that the surface is not damaged, the spring itself is weakened by holes or openings in the ring. The holes serve only to lessen the spring effect, which reduces the possibility of damage to the surface when the screw is screwed in.

As discussed above, neither D1 nor Lovisek discloses a spring element being a ring that has a plurality of openings distributed uniformly over its periphery. D3 has a plurality of radial projections ("tabs"), which are twisted to provide a digging-in action into the workpiece surface. D3 does not teach the use of a spring element at all. D3 stresses the importance of the tabs digging into the surface, as shown clearly in FIG. 3 of D3.

If one of ordinary skill in the art were to combine the teachings of D1 and Lovisek with that of D3, one would place the tabs of D3 on the screw surface that contacts the workpiece surface, so as to dig into the workpiece surface more efficiently. This tabbed screw surface would certainly not be "annular throughout", as recited by claim 12, and would certainly not prevent surface damage to the workpiece. If anything, the combined teachings of the reference would increase surface damage to the workpiece, which is quite the opposite effect of the screw described by claim 12.

Therefore, because the references, taken alone or together, fail to teach an element of claim 12, claim 12 is not obvious in view of the references.

Claims 6-10 are neither anticipated by nor obvious in view of the references

Dependent claims 6-10, which are dependent from independent claim 12, include all of the limitations of the base claim and any intervening claims, and recite additional features which further distinguish these claims from the cited references. Therefore, dependent claims 6-10 are also in condition for allowance.

CONCLUSION

In view of the amendments and reasons provided above, it is believed that all pending claims are in condition for allowance. The amendments clarify the patentable invention without adding new subject matter. Applicant respectfully requests favorable reconsideration and early allowance of all pending claims.

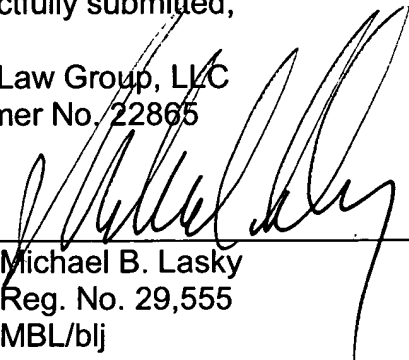
If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Applicant's attorney of record, Michael B. Lasky at (952) 253-4106.

Respectfully submitted,

Altera Law Group, LLC
Customer No. 22865

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By:



Michael B. Lasky
Reg. No. 29,555
MBL/blj